Estimate of Tau Lepton Energy in ν_τ CC Interactions (First Step)

-The idea is to use the P_T of the hadronic part of the interaction to estimate the momentum of the tau lepton. This can also be used to estimate the total energy of the event. (In general we know the direction of the τ well.) EM clusters (E > 1.5 GeV)not associated with charged tracks are also used.

-The P_T of the hadronic part is obtained using the emulsion angle of the tracks + the MS estimate for the momentum of the tracks.

- As a check of this method I will use the located ν_μ CC sample.

->The muon momentum for these events are generally well known.

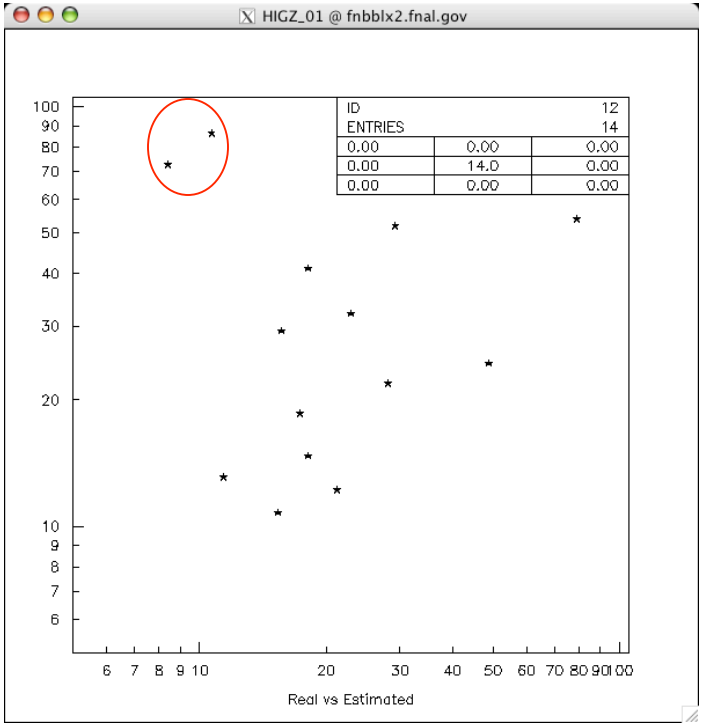
Estimate of Tau Lepton Energy …cont.
Breakdown of events

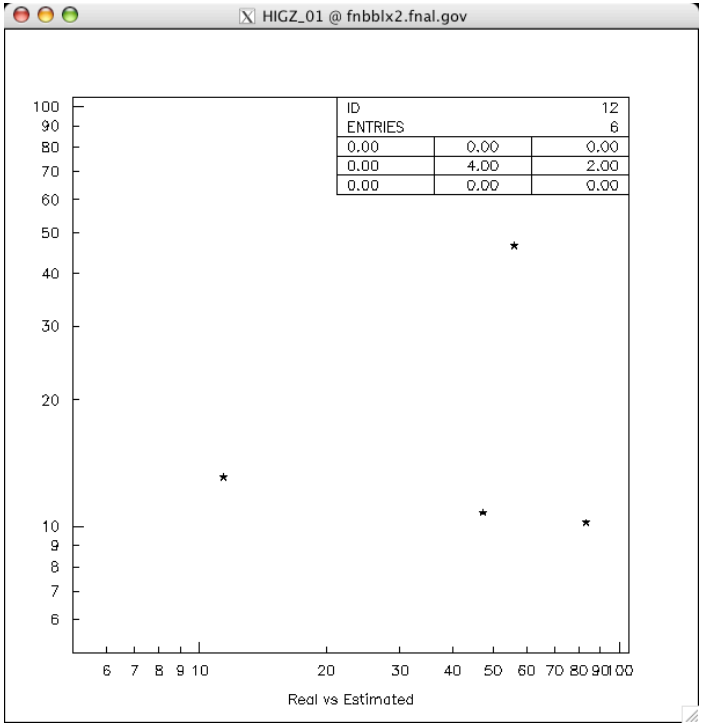
ν_μ CC sample:

1) Total number of events:	867
2) With reconstructed muon (nmidhit >= 4) and located	225
3) With good MS momentum measurement for muon	100
4) All charged tracks have "good" MS measurement (flag.eq.1) and ntrk>2	30
5) P_T of hadronic recoil > 250 MeV/c in U or V	24
6) μ angle > 5mr w.r.t. beam and hadronic P_T direction opposite to muon direction in U or V	18
7) If able to obtain good energy estimate in both U or V direction, difference not > a factor of 2	14

Estimate of Tau Lepton Energy …cont.

(Real - Muon Momentum measured in spectrometer)





Events that passed all cuts (*i.e.* up to 7)

-The two events in red circle: One occurred in module1 with many hits in SFT - missing energy. Other - many emulsion plates misaligned. MS measurement of muon momentum is very low compared to spect. measuremnent

Events that did not pass cuts from 5 to 6

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